

Copepod taxonomy: Discovery vs. recognition

David M. Damkaer

21318-195th Ave. SE, Monroe, Washington 98272-9481, U.S.A.

Abstract.—A table of copepod orders, families, and type genera, with authors and dates, revealed a general marked delay between the discovery of a genus and the establishment of higher taxa based on that genus. The average time from genus definition to order definition was 51 yr. For families, this delay was 31 yr, with a range of 0 to 159 yr. Excluding the 54 families defined simultaneously with the discovery of their type genus, the average delay was 42 yr. The future trajectory of accumulating family definitions is discussed. The present dynamics of copepod taxonomy may require additional decades before a falling off of new orders and families can be predicted.

A recently published copepod classification (Bowman & Abele 1982), in contrast to many such summaries, indicated authors and dates for taxa down to family. Since that publication, other authors have made additions or alterations to this classification (Fosshagen & Iliffe 1985, 1989; Ho 1990, 1991; Kim 1991, Grygier 1994). A revised classification of the current 10 copepod orders and 205 families is given in Table 1; changes from the table of Bowman & Abele are indicated. It became of interest to plot the establishment of the listed families by decade (Fig. 1), as a representation of the historical awareness of copepods as a large, distinct group of Crustacea. What is apparent is a steady increase in defined families over 160 yr, with at least four periods of exceptionally rapid progress. These periods can be attributed mostly to James Dwight Dana (1840s and 1850s), to Wilhelm Giesbrecht (1890s), to Georg Ossian Sars (1900s and 1910s), and to several investigators since 1950. Besides an obvious expression of personal energy, the association of those periods with individuals reflects in part an ability to sample in or obtain material from a wide variety of new habitats. There is also a necessary time-lag, since in any era there had to be a reasonable background of described species against which

the higher taxa could be discerned. [Note that an investigator could have defined nearly any and all of these higher taxa from literature, without once looking at a specimen—fortunately, this was not the case.]

A second relationship (Fig. 1) shows the establishment of the highest taxa within Copepoda, namely the eight orders into which the subclass was divided, as given by Bowman & Abele (1982), and two orders added in the subsequent decade (see Ho 1990). Again, this indicated a steady increase over the same long time. But was the establishment of these 10 orders, and their contained families as well, indicative of newly discovered fundamental copepod types, or were these higher taxa based on delayed recognition? Answering this question first for the copepod orders, it was seen that the genera upon which all 10 principal groups are based had been defined between 1776 and 1977, with 8 by 1891 and with 7 by 1865. The range of time between discovery of the genus and the recognition that it represented an entirely new major copepod division was 0 yr, for Siphonostomatoida, to 88 yr, for Mormonilloida. The average time from discovery of the genus to the definition of the order for which that genus is the type was 51 yr. That the earliest order, Cyclopoida, was defined in 1835 does not

Table 1.—Copepod classification to family, including type genera of families (modifications to Bowman & Abele (1982) indicated by *). The original date of a preoccupied and replaced genus name is indicated by PN.

*Subclass Copepoda Milne Edwards, 1830

Order Calanoida Sars, 1903

Acartiidae Sars, 1903
Acartia Dana, 1846

Aetideidae Giesbrecht, 1892
Aetideus Brady, 1883

Arietellidae Sars, 1902
Arietellus Giesbrecht, 1892

Augaptilidae Sars, 1905
Augaptilus Giesbrecht, 1889

Bathypontiidae Brodsky, 1950
Bathypontia Sars, 1905

*Boholiniidae Fosshagen & Iliffe, 1989
Boholina Fosshagen, 1989

Calanidae Dana, 1849
Calanus Leach, 1816

Calocalanidae Bernard, 1958
Calocalanus Giesbrecht, 1888

Candaciidae Giesbrecht, 1892
Candacia Dana, 1846

Centropagidae Giesbrecht, 1892
Centropages Krøyer, 1849

Clausocalanidae Giesbrecht, 1892
Clausocalanus Giesbrecht, 1888

Diaixidae Sars, 1902
Diaixis Sars, 1902

Diaptomidae Baird, 1850
Diaptomus Westwood, 1836

Discoidea Gordejeva, 1975
Disco Grice & Hulsemann, 1965

Epacteriscidae Fosshagen, 1973
Epacteriscus Fosshagen, 1973

Eucalanidae Giesbrecht, 1892
Eucalanus Dana, 1852

Euchaetidae Giesbrecht, 1892
Euchaeta Philippi, 1843

Heterorhabdidae Sars, 1902
Heterorhabdus Giesbrecht, 1898 (PN 1863)

Lucicutiidae Sars, 1902
Lucicutia Giesbrecht, 1898 (PN 1863)

Mecynoceridae Andronov, 1973
Mecynocera I. C. Thompson, 1888

Megacalanidae Sewell, 1947
Megacalanus Wolfenden, 1904

Mesaiokeratidae Matthews, 1961
Mesaiokeras Matthews, 1961

Metridiidae Sars, 1902
Metridia Boeck, 1865

Paracalanidae Giesbrecht, 1892
Paracalanus Boeck, 1865

Parapontellidae Giesbrecht, 1892
Parapontella Brady, 1878

Table 1.—Continued.

*Subclass Copepoda Milne Edwards, 1830

Phaennidae Sars, 1902
Phaenna Claus, 1863

Phyllopodidae Brodsky, 1950
Phyllopus Brady, 1883

Pontellidae Dana, 1853
Pontella Dana, 1846 (PN 1828)

Pseudocyclopidae Giesbrecht, 1893
Pseudocyclops Brady, 1872

Pseudocyclopiidae Sars, 1902
Pseudocyclopia T. Scott, 1892

Pseudodiaptomidae Sars, 1902
Pseudodiaptomus Herrick, 1884

Ridgewayiidae M. S. Wilson, 1958
Ridgewayia I. C. Thompson & A. Scott, 1903

Ryocalanidae Andronov, 1974
Ryocalanus Tanaka, 1956

Scolecithricidae Giesbrecht, 1892
Scolecithrix Brady, 1883

Spinocalanidae Vervoort, 1951
Spinocalanus Giesbrecht, 1888

Stephidae Sars, 1902
Stephos T. Scott, 1892

Sulcanidae Nicholls, 1945
Sulcanus Nicholls, 1945

Temoridae Giesbrecht, 1892
Temora Baird, 1850

Tharybidae Sars, 1902
Tharybis Sars, 1902

Tortanidae Sars, 1902
Tortanus Giesbrecht, 1898 (PN 1883)

Order Harpacticoida Sars, 1903

Adenopleurellidae Huys, 1990
Adenopleurella Huys, 1990

Aegisthidae Giesbrecht, 1892
Aegisthus Giesbrecht, 1891

Ambunguipedidae Huys, 1990
Ambunguipes Huys, 1990

Ameiridae Monard, 1927
Ameira Boeck, 1865

Ancorabolidae Sars, 1909
Ancorabolus Norman, 1903

Balaenophilidae Sars, 1910
Balaenophilus P. O. Aurivillius, 1879

Cancrincolidae Fiers, 1990
Cancrincola C. B. Wilson, 1913

Canthocamptidae Sars, 1906
Canthocamptus Westwood, 1836

Canuellidae Lang, 1948
Canuella T. & A. Scott, 1893

Cerviniidae Sars, 1903
Cervinia Brady, 1878

Chappuisiidae Chappuis, 1940
Chappuisius Kiefer, 1938

Cletodidae T. Scott, 1904
Cletodes Brady, 1872

Table 1.—Continued.

*Subclass Copepoda Milne Edwards, 1830

Cristacoxidae Huys, 1990
Cristacoxa Huys, 1990

Cylindropsyllidae Sars, 1909
Cylindropsyllus Brady, 1880

Darcythompsoniidae Lang, 1936
Darcythompsonia T. Scott, 1906

Diosaccidae Sars, 1906
Diosaccus Boeck, 1872

Ectinosomatidae Sars, 1903
Ectinosoma Boeck, 1865

Hamondiidae Huys, 1990
Hamondia Huys, 1990

Harpacticidae Dana, 1846
Harpacticus Milne Edwards, 1840

Laophontidae T. Scott, 1904
Laophonte Philippi, 1840

Latremitidae Bozic, 1969
Latremitis Bozic, 1969

Longipediidae Sars, 1903
Longipedia Claus, 1863

Louriniidae Monard, 1927
Lourinia C. B. Wilson, 1924 (PN 1866)

Metidae Sars, 1910
Metis Philippi, 1843

Miraciidae Dana, 1846
Miracia Dana, 1846

Neobradyidae Olofsson, 1917
Neobradya T. Scott, 1892

Paramesochridae Lang, 1948
Paramesochra T. Scott, 1892

Parastenheliidae Lang, 1936
Parastenhelia I. C. Thompson & A. Scott, 1903

Parastenocaridae Chappuis, 1933
Parastencaris Kessler, 1913

Peltidiidae Sars, 1904
Peltidium Philippi, 1839

Phyllognathopodidae Gurney, 1932
Phyllognathopus Mrazek, 1893

Porcellidiidae Sars, 1904
Porcellidium Claus, 1860 (PN 1840)

Pseudopeltidiidae Poppe, 1891
Clytemnestra Dana, 1848

Tachidiidae Sars, 1909
Tachidius Lilljeborg, 1853

Tegastidae Sars, 1904
Tegastes Norman, 1903

Tetragonicepsidae Lang, 1944
Tetragoniceps Brady, 1880

Thalestridae Sars, 1905
Thalestris Claus, 1863

Tisbidae Stebbing, 1910
Tisbe Lilljeborg, 1853

Order Cyclopoida Burmeister, 1835

Archinotodelphyidae Lang, 1949
Archinotodelphys Lang, 1949

Table 1.—Continued.

*Subclass Copepoda Milne Edwards, 1830

Ascidicolidae Thorell, 1859
Ascidicola Thorell, 1859

Botryllophilidae Sars, 1921
Botryllophilus Hesse, 1864

Buproridae Thorell, 1859
Buprorus Thorell, 1859

Cyclopidae Dana, 1853
Cyclops Muller, 1776

Cyclopinidae Sars, 1913
Cyclopina Claus, 1863

Doropygidae Brady, 1878
Doropygus Thorell, 1859

Enterocolidae Sars, 1921
Enterocola van Beneden, 1860

*Enteropsidae C. W. S. Aurivillius, 1885
Enteropsis C. W. S. Aurivillius, 1885

*Lernaeidae C. B. Wilson, 1917
Lernaea Linnaeus, 1758

*Mantridae Leigh-Sharpe, 1934
Mantra Leigh-Sharpe, 1934

Notodelphyidae Dana, 1853
Notodelphys Allman, 1847

Oithonidae Dana, 1853
Oithona Baird, 1843

Ozmanidae Ho & Thatcher, 1989
Ozmana Ho & Thatcher, 1989

*Phyllocolidae Delamare-Deboutteville & Laubier, 1960
Phyllocicola Delamare-Deboutteville & Laubier, 1960

*Schizoproctidae C. W. S. Aurivillius, 1885
Schizoproctus C. W. S. Aurivillius, 1885

Speleoithonidae da Rocha & Iliffe, 1991
Speleoithona da Rocha & Iliffe, 1991

Order Poecilostomatoida Thorell, 1859

*Amazonicopeidae Thatcher, 1986
Amazonicopeus Thatcher, 1986

Anchimgoldidae Humes & Boxshall, 1996
Anchimgoldus Humes & Stock, 1972

Anomoclausidae Gotto, 1964
Anomoclausia Gotto, 1964

Anomopsyllidae Sars, 1921
Anomopsyllus Sars, 1921

*Anthecheridae M. Sars, 1870
Anthecheres M. Sars, 1857

*Anthessiidae Humes, 1986
Anthessius Della Valle, 1880

*Bomolochidae Claus, 1875
Bomolochus von Nordmann, 1832

Catiniidae Bocquet & Stock, 1957
Catinia Bocquet & Stock, 1957

Chondracanthidae Milne Edwards, 1840
Chondracanthus Delaroche, 1811

Clausidiidae Embleton, 1901
Clausidium Kossmann, 1874

Table 1.—Continued.

*Subclass Copepoda Milne Edwards, 1830

Clausiidæ Giesbrecht, 1895
Clausia Claparede, 1863

Coralloveliidae Stock, 1975
Corallovelia Stock, 1975

Corycaeidae Dana, 1852
Corycaeus Dana, 1845

Cucumariolidae Bouligand & Delamare-Deboutteville, 1959
Cucumaricola Peterson, 1958

Echiurophilidae Delamare-Deboutteville & Nunes-Ruivo, 1955
Echiurophilus Delamare-Deboutteville & Nunes-Ruivo, 1955

*Entobiidae Ho, 1984
Entobius Dogiel, 1908

*Erebonasteridae Humes, 1987
Erebonaster Humes, 1987

*Ergasilidae Burmeister, 1835
Ergasilus von Nordmann, 1832

Eunicolidæ Sars, 1918
Eunicicola Kurz, 1877

Gastrodelphyidae List, 1889
Gastrodelphys Graeffe, 1883

*Herpyllobiidae Hansen, 1892
Herpyllobius Steenstrup & Lutken, 1861

Intramolgidae Marchenkov & Boxshall, 1995
Intramoligus Marchenkov & Boxshall, 1995

Kelleriidae Humes & Boxshall, 1996
Kelleria Gurney, 1927

Lichomolgidae Kossmann, 1877
Lichomoligus Thorell, 1859

Macrochirontidae Humes & Boxshall, 1996
Macrochiron Brady, 1872

*Mesoglicolidæ de Zulueta, 1911
Mesoglicola Quidor, 1906

Mycolidæ Yamaguti, 1936
Mycicola Wright, 1885

Mytilicolidae Bocquet & Stock, 1957
Mytilicola Steuer, 1902

Nereicolidae Claus, 1875
Nereicola Keferstein, 1863

Nucellicolidæ Lamb, Boxshall, Mill, & Grahame, 1996
Nucellicola Lamb, Boxshall, Mill, & Grahame, 1996

Octopicolidae Humes & Boxshall, 1996
Octopicola Humes, 1957

Oncaeiidae Giesbrecht, 1892
Oncaea Philippi, 1843

*Paralubbockiidae Boxshall & Huys, 1990
Paralubbockia Boxshall, 1977

Pharodidae Illg, 1948
Pharodes C. B. Wilson, 1935

*Philichthyidae Vogt, 1877
Philichthys Steenstrup, 1862

Table 1.—Continued.

*Subclass Copepoda Milne Edwards, 1830

Philoblennidae Izawa, 1976
Philoblenna Izawa, 1976

Pseudanthessiidae Humes & Stock, 1972
Pseudanthessius Claus, 1889

*Rhynchomolgidae Humes & Stock, 1972
Rhynchomoligus Humes & Ho, 1967

Sabelliphilidae Gurney, 1927
Sabelliphilus M. Sars, 1862

Sapphirinidae Thorell, 1859
Sapphirina J. V. Thompson, 1829

Serpulidicolidae Stock, 1979
Serpulidicola Southward, 1964

Shiinoidae Cressey, 1975
Shiinoa Kabata, 1968

*Spiophanicolidæ Ho, 1984
Spiophanicola Ho, 1984

Splanchnotrophidae Norman & T. Scott, 1906
Splanchnotrophus Hancock & Norman, 1863

Synapticolidæ Humes & Boxshall, 1996
Synapticola Voigt, 1892

Synaptiphilidae Bocquet & Stock, 1957
Synaptiphilus Canu & Cuenot, 1892

Taeniacanthidae C. B. Wilson, 1911
Taeniacanthus Sumpf, 1871

*Tegobomolochidae Avdeev, 1978
Tegobomolochus Izawa, 1976

Telsidae Ho, 1967
Telson Pearse, 1952

Thamnomolgidae Humes & Boxshall, 1996
Thamnomoligus Humes, 1969

Tuccidae Vervoort, 1962
Tucca Krøyer, 1837

Urocopiidae Humes & Stock, 1972
Urocopia Sars, 1917

Vahiniidae Humes, 1967
Vahinius Humes, 1967

*Vaigamidae Thatcher & Robertson, 1984
Vaigamus Thatcher & Robertson, 1984

Xarifiidae Humes, 1960
Xarifia Humes, 1960

Order Siphonostomatoida Thorell, 1859

Artotrogidae Brady, 1880
Artotrogus Boeck, 1859

Ascomyzontidae Thorell, 1859
Ascomyzon Thorell, 1859

Asterocheridae Giesbrecht, 1899
Asterocheres Boeck, 1859

Brychiopontiidae Humes, 1974
Brychiopontius Humes, 1974

Caligidæ Burmeister, 1835
Caligus Muller, 1785

*Calverocheridae Stock, 1968
Calverocheres C. B. Wilson, 1932 (PN 1902)

Cancerillidae Giesbrecht, 1897
Cancerilla Dalyell, 1851

Table 1.—Continued.

*Subclass Copepoda Milne Edwards, 1830

Catlyphilidae Tripathi, 1960
Catlyphila Tripathi, 1960
 Cecropidae Dana, 1852
Cecrops Leach, 1816
 Choniostomatidae Hansen, 1887
Choniostoma Hansen, 1887
 Chordeumiidae Boxshall, 1988
Chordeumium Stephensen, 1918
 Coralliomyzontidae Humes & Stock, 1991
Coralliomyzon Humes & Stock, 1991
 *Dichelesthiidae Milne Edwards, 1840
Dichelesthium Hermann, 1804
 Dinopontiidae Murnane, 1967
Dinopontius Stock, 1960
 Dirivultidae Humes & Dojiri, 1980
Dirivultus Humes & Dojiri, 1980
 Dissonidae Yamaguti, 1963
Dissonus C. B. Wilson, 1906
 Dyspontiidae Giesbrecht, 1895
Dyspontius Thorell, 1859
 Ecbathyriontidae Humes, 1987
Ecbathyrion Humes, 1987
 Entomolepidae Brady, 1899
Entomolepis Brady, 1899
 *Eudactylinidae C. B. Wilson, 1932
Eudactylina van Beneden, 1853
 Euryphoridae C. B. Wilson, 1905
Euryphorus Milne Edwards, 1840
 Hatschekiidae Kabata, 1929
Hatschekia Poche, 1902
 Hyponeoidea Heegaard, 1962
Hyponeo Heegaard, 1962
 Kroyeriidae Kabata, 1979
Kroyeria van Beneden, 1853
 *Lamippidae Joliet, 1882
Lamippe Bruzelius, 1858
 Lernaoceridae Gurney, 1933
Lernaocera de Blainville, 1822
 *Lernaepodidae Milne Edwards, 1840
Lernaepoda de Blainville, 1822
 Lernanthropidae Kabata, 1979
Lernanthropus de Blainville, 1822
 Megapontiidae Heptner, 1968
Megapontius Hulsemann, 1965
 Micropontiidae Gooding, 1957
Micropontius Gooding, 1957
 Myzopontiidae Sars, 1915
Myzopontius Giesbrecht, 1895
 Nanaspididae Humes & Cressey, 1959
Nanaspis Humes & Cressey, 1959
 Naobranchiidae Yamaguti, 1939
Naobranchia Hesse, 1863
 Nicothoidae Dana, 1852
Nicothoe Audouin & Milne Edwards, 1826

Table 1.—Continued.

*Subclass Copepoda Milne Edwards, 1830

Pandaridae Milne Edwards, 1840
Pandarus Leach, 1816
 Pennellidae Burmeister, 1835
Pennella Oken, 1816
 Pontoeciellidae Giesbrecht, 1895
Pontoeciella Giesbrecht, 1895
 Pseudocycnidae C. B. Wilson, 1922
Pseudocycnus Heller, 1865
 Rataniidae Giesbrecht, 1897
Ratania Giesbrecht, 1892
 Saccopsidae Lutzen, 1964
Saccopsis Levinsen, 1878
 *Sphyrriidae C. B. Wilson, 1919
Sphyrion Cuvier, 1830
 Spongiocnizontidae Stock & Kleeton, 1964
Spongiocnizon Stock & Kleeton, 1964
 Stellicomitidae Humes & Cressey, 1958
Stellicomes Humes & Cressey, 1958
 Tanypleuridae Kabata, 1969
Tanypleurus Steenstrup & Lutken, 1861
 *Trebiidae C. B. Wilson, 1905
Trebius Krøyer, 1838
 Ventriculinidae Leigh-Sharpe, 1934
Ventriculina Bassett-Smith, 1903
 Xenocoelomatidae Bresciani & Lutzen, 1966
Xenocoeloma Caullery & Mesnil, 1915
 Order Monstrilloida Sars, 1903
 *Monstrillidae Dana, 1849
Monstrilla Dana, 1849
 *Order Misophrioida Gurney, 1927
 Misophriidae Brady, 1878
Misophria Boeck, 1865
 Order Mormonilloida Boxshall, 1979
 Mormonillidae Giesbrecht, 1892
Mormonilla Giesbrecht, 1891
 *Order Platycopioida Fosshagen, 1985
 Platycopiidae Sars, 1911
Platycopia Sars, 1911
 *Order Gelyelloida Huys, 1988
 Gelyellidae Rouch & Lescher-Moutoue, 1977
Gelyella Rouch & Lescher-Moutoue, 1977
 Order uncertain
 Chitonophilidae Avdeev & Sirenko, 1991
Chitonophilus Avdeev & Sirenko, 1991
 Sponginticolidae Topsent, 1928
Sponginticola Topsent, 1928
 Staurosomatidae de Zulueta, 1911
Staurosoma Will, 1844

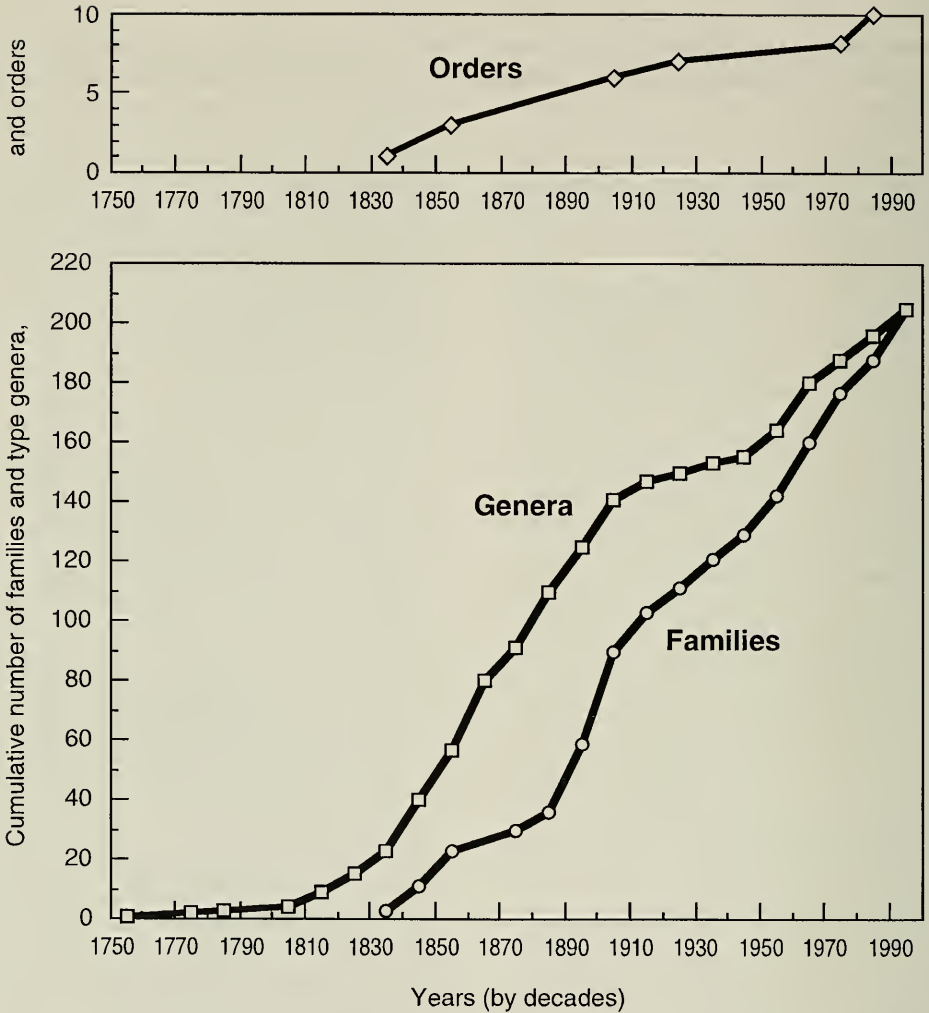


Fig. 1. Cumulative number of defined families, type genera, and orders of copepods, by decade, from 1750 to 1996.

mean that there were no other order-level taxa at that time, but that the other analogous groups have fallen out of favor in the meantime.

This prompted a similar approach toward the families: were they indicative of newly discovered family-level Copepoda, or were they mostly the result of deliberative comparison of accumulating genus descriptions? This was not so easily answered; a foray into the literature spread across the whole of Copepoda to determine the type-genus (and date) for each family was not trivial. This is

also a dynamic process, and undoubtedly alterations and additions are now occurring. In fact, seven families were described in 1996 after the first draft was completed. As with Bowman & Abele, I do not provide references for the indicated authors; this would be beyond the intention of the survey. Some type genera are dated from the time a new name was proposed to replace a preoccupied name; in these cases I have used the older date for the calculations, since the discovery was based on the earlier date; these extended dates are indicated in Table 1.

A third relationship (Fig. 1) shows the time-dependency of the descriptions of what became type-genera for families. The indication, when comparing the family and type-genus curves, is that copepodologists are in general a conservative company. Over the preceding 160 yr, 54 families (26%) were proposed at the time that the type genus was described. (These "instant" families arose between 1846 and 1996, with the median year of 1963; that is, the phenomenon is skewed to recent years, as one might expect given the accumulated background of defined families.) Another way to look at this is that most of the fundamental (family) copepod types were discovered long before they were recognized as such. Overall, the average delay time was 31 yr, with a range of 0 to 159 yr. Excluding the families that were defined at the time the type genus was described, the average delay time for family definition was 42 yr. If the type species, rather than the type genus, is considered, the dates would be set back even farther in some cases, although probably not significantly so.

Note that 10 genera would define the present 10 orders, just as the 205 type genera basically define the 205 families. All the many other genera are superfluous, except, of course, that they define the *limits* of higher taxa already defined in their essentials.

Can we use the curves to make predictions? The type-genus curve cannot be predictive, mainly because it does not exist until families are defined; a predictive genus curve would have to include the many more genera besides type genera. The genus curve should not be compared within decades to the family curve; the only comparison should be horizontal, reflecting the time lags. Since families must await the discovery of their type genera, there will always, in general, be a lag time. Recently discovered genera that become type genera force the two curves to converge, since there is obviously not much time available for a newly discovered genus to have be-

come the type of a new family. Future association of the two curves depends on whether families are made from recently described genera (the curves will remain together) or from older genera (the curves will again separate). The availability of large numbers of well-defined families potentially makes it easier to discern new families with the discovery of new genera or with reconsideration of older genera. Clearly, a trend to be avoided would be the creation of a new family from each genus, thereby defeating the notion of a classification hierarchy.

There is no trend suggesting that families might not be defined at the previous rate, or that we are running out of new families. Of course, as new habitats are explored, such as caves and deep-ocean thermal vents, new genera representing new families would be expected. Given the present dynamics of copepod taxonomy, predictions may require a few more decades of observation.

Even without the discovery of absolutely new types, taxa above genera will be added as more details, especially of developmental biology, are added to the framework in place and more comparisons are made. Copepod taxonomy has long been vexed by many imperfectly described species, and a re-working of these will add some surprises. Also, there are some copepod families that cannot now be placed into the defined orders; there are also many genera that are not yet assigned to families. These may be raw material for additional higher taxa, or the discovery of intermediate species may link them to established groups. There is a wealth of material to contemplate, with future intensive rearranging. However, eventually there will be no more orders and no more families to discover.

For those who are depressed by this prospect, and fear coming idleness, there is an infinitude of related research to be done. I offer the insight of Herman Melville (1851): "Dissect him how I may, then, I but

go skin deep; I know him not, and never will."—Moby Dick, Chapter 86.

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